

REMARKS

Claims 1-20 are pending in the application.

Independent claims 1 and 10 are amended above to more clearly set forth what it is that the Applicant regards as the invention.

Allowable claims 9 and 18-19 are amended above to convert them into independent form.

No new matter is added to the application by these amendments.

I. TRAVERSE OF THE OBVIOUSNESS REJECTION

The Examiner rejected claims 1-8, 11-17 and 20 for being obvious over Miyoshi (USP 6281840) in view of Margerum (USP 4481519).

It is the examiner's position that Miyoshi discloses all of the features of independent claims 1, 10 and 20 except for deriving combined antenna signal strengths by forming combinations of first and second antenna signals into two sets with signals in one set having non-zero phase difference relative to signals in the other set. The examiner relies upon Margerum for allegedly teaching this missing Miyoshi feature. Moreover, the examiner justifies the combination of the two references by taking the position that "it would have been obvious to modify Miyoshi by incorporating the teaching of Margerum's combination to combine antenna's signals so as the system is able to determine an emitter bearing." Claims 1-8, 11-17 and 20 are patentable at least because the prior art does not disclose every feature of the claimed invention and because the combination would not result in the claimed invention.

A. There is no *Prima Facie* Case of Obviousness

Independent claims 1, 10 and 20 are amended above in a manner that further distinguishes them from the prior art. The present invention, as claimed in independent claims 1, 10 and 20 include a "means for determining at least two emitter bearings using the individual and combined antenna signal strengths measured." Neither Miyoshi nor Margerum disclose this feature of all independent claims and, therefore, there is no *prima facie* case of obviousness.

The examiner relies upon Margerum for teaching the claim feature of deriving combined antenna signal strengths by forming combinations of first and second antenna signals into two set with signals in one set having non-zero phase difference relative to signals in the other set as the examiner maintains. However, Margerum does not disclose any method for determining

individual signal strengths of antennas. Instead, all measurements in Margerum are of phases and not strengths. Moreover, all Margerum measurements are of phases of combined signals and not individual signals. This is clear from Figure 1 of Margerum and its accompanying description which discloses that the 180° hybrid (44) feeds switch (4) with either the sum of two chosen antennas or the difference. Thus, the Margerum switch can never pass just one signal measurement - it is always a combined signal. Also, Margerum works by using phase measurements of combined signals as opposed to the signal strengths measurements of individual and combined signals of the present invention. For at least this reason, there is no *prima facie* case of obviousness and the rejection of claims 1-8, 11-17 and 20 must be withdrawn.

B. The Combination of the Prior Art Does Not Result in the Claimed Invention

Claims 1-8, 11-17 and 20 are also non-obvious and patentable because the combination of Miyoshi with Margerum would not result in the presently claimed invention. Miyoshi discloses measuring individual signal strengths in order to find the strongest received signal. Miyoshi has absolutely no relevance to the field of transmitter location or direction finding. Indeed, the direction of rival signals in Miyoshi is irrelevant to its operation and the purpose as Miyoshi is not related in any manner to direction finding. In contrast, Margerum works by using phase measurements of combined signals. It would be impossible therefore to modify the signal strength measurement of Miyoshi with the phase strength measurement of Margerum to form the presently claimed invention.

C. Claims 2-4 and 11-13 are Independently Patentable

Claims 2-3 and 11-12 are independently nonobvious and patentable. The examiner takes the position that Miyoshi teaches the use of a covariance matrix from antenna signal strengths to derive an emitter bearing. The examiner cites to column 5, lines 24-41 of Miyoshi as disclosing this feature. However, the cited portion of Miyoshi has no relevance whatsoever to covariance matrices or emitter bearings and claims 2-3 and 11-12 are nonobvious and patentable over Miyoshi because Miyoshi does not disclose the features added to the invention by these claims.

Claims 4 and 13 are similarly independently nonobvious and patentable. Both claims are directed to a system where the relative phase differences in the range of 30 to 120°. The examiner relies upon Margerum for disclosing this feature. However, Margerum only discloses the system that functions at 90° phase switching. There is absolutely no disclosure or suggestion

is made in Margerum of the system working at any other phase switching angles and claims 4 and 13 are nonobvious over the prior for at least this reason.

II. THE ALLOWABLE CLAIMS

The examiner indicated that claims 9 and 18-19 would be allowed if rewritten in independent form to include all of the features of the base claim and any intervening claims. Claims 9 and 18-19 are amended above to convert them into allowable independent claims.

CONCLUSION

Pending application claims 1-20 are believed to be patentable for the reasons recited above. Favorable reconsideration and allowance of all pending application claims is, therefore, courteously solicited.

McDonnell Boehnen Hulbert & Berghoff LLP

Date: August 28, 2008

By: /A. Blair Hughes/
A. Blair Hughes
Reg. No. 32,901
312-913-2123